

APPENDIX E

COMPANY MORTARS

This appendix provides the company commander and other leaders guidance on the tactical employment of the company mortar section/platoon. The mortar section provides the company with immediate suppression and marking capabilities and limited smoke and illumination capabilities. The section's missions are to provide close-in, immediate, indirect fire to kill or suppress the enemy, and to obscure or illuminate the battlefield. (See FM 7-90 for details on employing mortars.)

E-1. ORGANIZATION

In most infantry units, mortar sections are made up of two squads, each consisting of one 60-mm mortar and its crew (Figures E-1 and E-2). The section leader is also one of the squad leaders. He is directly responsible to the CO. While there is not an FDC in the section, the section leader establishes and operates an FDC whenever the mortar section occupies static positions or makes a lengthy halt. The mortar section leader must work closely with the CO and his FSO to maximize the section's fires. In some units, the 81-mm mortar (Figure E-3) is found. The platoon has five vehicles to move its equipment, ammunition, and personnel; it also has an organic FDC.

E-2. RESPONSIBILITIES OF KEY PERSONNEL

Team work is the key to an efficient mortar section. Duties must be constantly drilled and personnel cross-trained.

a. The mortar section leader is responsible (overall) to the CO for the mortar section. His duties include—

- Advising the CO on employing and positioning the mortar section.
- Assisting the FIST chief in planning fire support for the company.
- Keeping the CO informed of the location of the mortar section and the status of the mortars and ammunition.
- Maintaining a situation map showing all supported units' locations, mortar positions, maximum range lines, and targets.
- Planning, initiating, and supervising the timely displacement of the section.
- Supervising security, resupply, and communications for the section.
- Seeing that preparations are made for special firing techniques, such as direct lay and direct alignment.
- Performing the duties of chief computer.
- Cross-checking target plots.
- Maintaining ammunition records and submitting resupply requests.
- Recommending to the CO when the mortars should displace, and controlling their displacement.
- Relaying enemy information from forward observers to the company and others, as directed.

b. The mortar squad leader and gunners' responsibilities include—

- Moving and positioning the mortar as directed.
- Seeing that the mortar is properly laid.
- Checking overhead and mask clearance, and camouflage.
- Maintaining a map showing positions, sectors, and targets (needed for independent operations or when displacing by squads).
- Computing firing data for independent operations.
- Ensuring that ammunition is properly stored.
- Checking rounds for indexing and charges.
- Maintaining communications with the FDC, when applicable.

E-3. POSITIONS

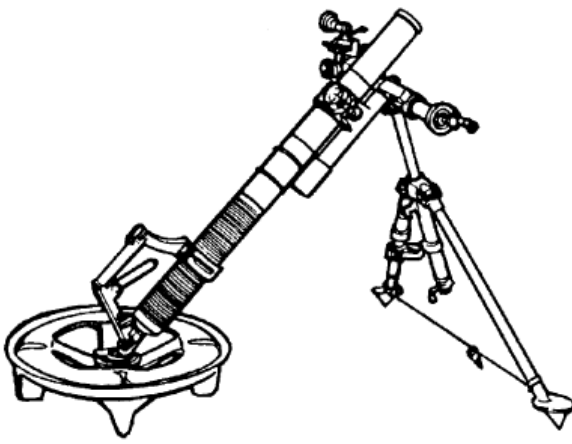
Based on the CO's guidance, mission, and terrain, the mortar section leader reconnoiters and selects mortar firing positions. In the 81-mm mortar platoon, a representative from the base gun and one man from the FDC may help reconnoiter and prepare the new position.

a. A mortar section position should—

(1) Allow firing on targets throughout the company's sector/zone or the supported platoon's sector/zone. (In the offense, one-half to two-thirds of the range of the mortars should be forward of the lead platoon. This reduces the number of moves needed.)

(2) Be in defilade to protect the mortars from enemy observation and direct fire. (Places, such as the reverse slope of a hill, a deep ditch, the rear of a building, and the rear of a stone wall, are well-suited for mortar positions. The reverse slope of a hill may even protect mortars from some indirect fire.)

(3) Have concealment from air and ground observation. (Vegetation is best for breaking up silhouettes. Vehicles should be positioned in defilade where natural camouflage conceals them. When the location of the firing position provides little concealment, consider the use of a hide position, which provides good cover and concealment and allows the mortar crews to quickly occupy their firing positions when required).



WEAPON	AMMUNITION		METERS	
	MODEL	TYPE	MINIMUM RANGE	MAXIMUM RANGE
60-mm M224	M720/M888	HE	70	3,500
	M722	WP	70	3,000
	M721	ILLUM	200	3,500
	M302A1	WP	35	1,630
	M83A3	ILLUM	725	950
	M49A4	HE	45	1,930

Figure E-1. M224, 60-mm mortar and ammunition data.

(4) Have overhead and mask clearance. (Overhead clearance is checked by setting the sight at maximum elevation and looking along the mortar tube. Mask clearance is checked the same way, but at minimum elevation.)

(5) Have solid ground that supports vehicle movement and precludes excessive settling of baseplates. (On soft ground, put sandbags under the baseplate to reduce settling.)

(6) Have 25 to 30 meters between 60-mm mortars and 35 to 40 meters between 81-mm mortars. (This reduces the chance of having more than one mortar hit by one enemy round. It also provides proper sheaf dispersion without plotting for each gun.)

(7) Have routes in and out. (These routes should ease resupply and displacement.)

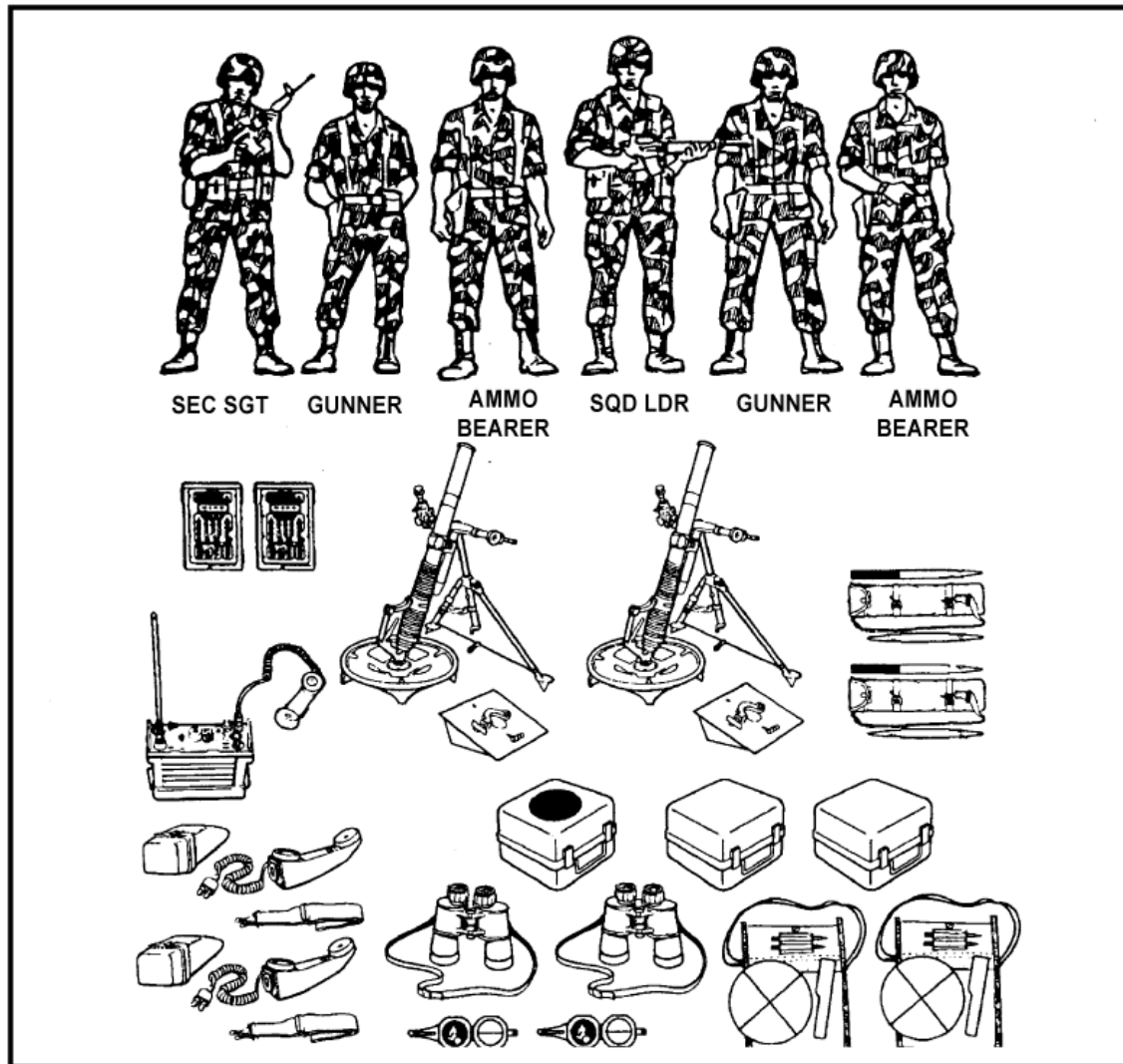


Figure E-2. Equipment and organization.

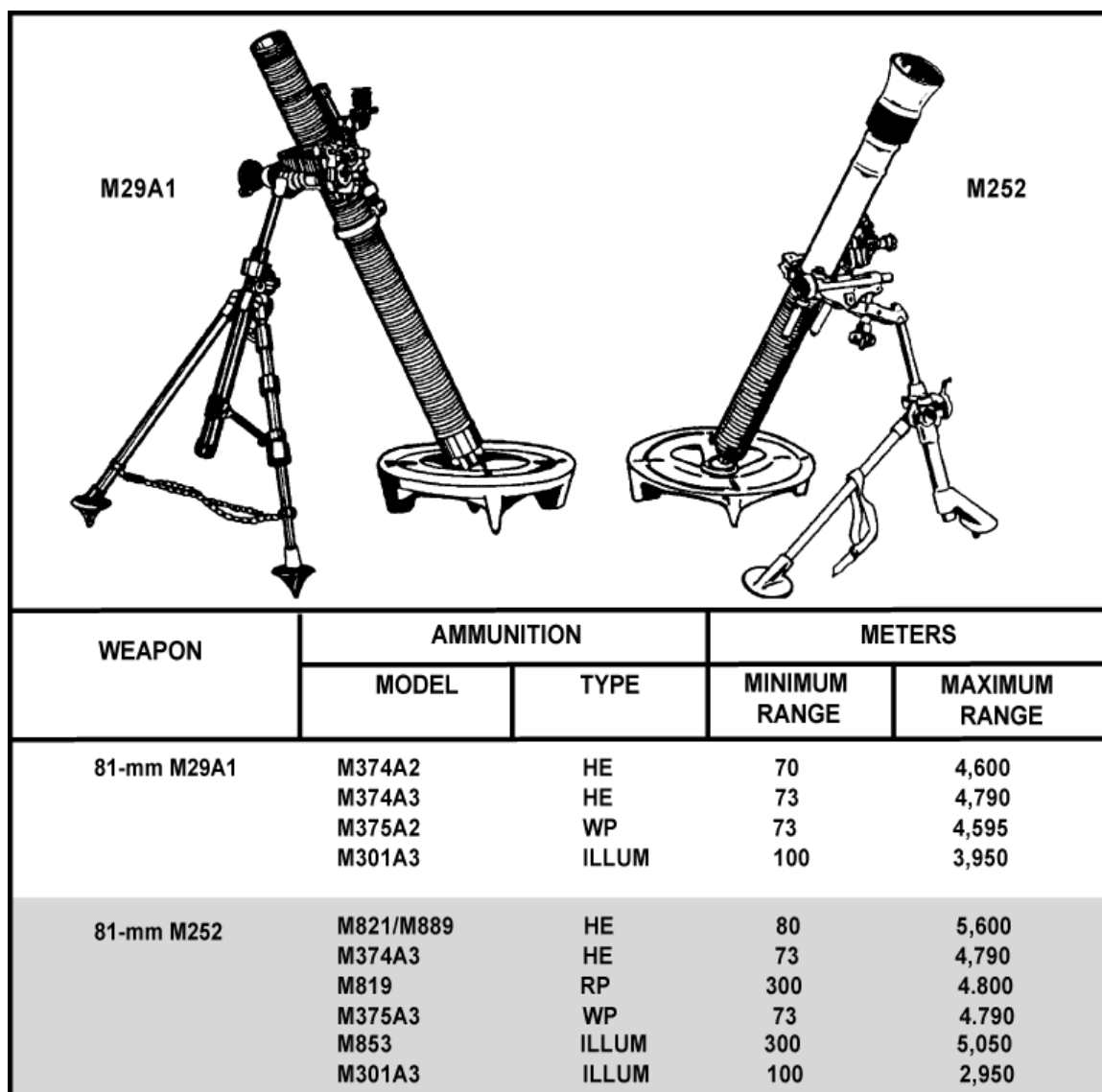


Figure E-3. 81-mm mortar.

(8) Be secure. (The section may have to provide its own local security. Being near other friendly units will improve security.)

(9) Avoid overhead fire of friendly soldiers when possible.

b. The FDC may be in voice-distance of the squads; however, telephone wire should be laid from the FDC to each squad for security purposes and because battle noise may be so intense that the commands cannot be heard.

c. The 81-mm platoon normally provides its own security. It does this by posting OPs, employing early warning devices, and digging mortar positions.

d. The 60-mm mortar section has a very limited capability to secure itself. Normally, it collocates with other elements, or it has a security element attached.

e. Mortar crews prepare mortar positions to protect themselves and to serve as firing positions for the mortars. The crews construct the positions with sandbags, ammunition boxes, earth, or any other available materials. (FM 7-90 describes these dug-in positions.)

E-4. EMPLOYMENT

In a movement to contact, the mortar section usually supports the company with priority of fire to the lead platoon. The section normally displaces one squad at a time so that at least one squad is always in position and ready to fire. The section's displacement is based on the company's movement. The leader keeps the CO informed of the location and status of his weapons and ammunition. The FOs report their locations (in code) to the FDC.

a. In an attack, initial firing positions are prepared, and ammunition may be stockpiled. Positions are occupied at the last moment before the attack. The section must remain ready throughout the attack to respond to calls for fire and to displace, if necessary.

b. In the defense, mortars are farther to the rear than in the offense. The CO plans his mortar section's final protective fire on a dangerous, dismounted enemy avenue of approach. Extra ammunition is stockpiled (if feasible). The mortars have some security when behind forward troops, but they still prepare to defend their positions.

c. To avoid being suppressed, a number of mortar positions are designated, prepared (if feasible), and occupied as required during the battle.

d. In a withdrawal not under enemy pressure, one or more mortars may be left in position to support the DLIC.

e. No matter where the platoon/section is located, it does everything it can for its own security. It may be able to post one or two security elements (equipped with Claymores and LAWs) on the most dangerous approaches. Early warning devices are also used. If attacked, the security elements give warning, kill as many of the enemy as they can, and then rejoin their squads. The rest of the unit defends them from the dug-in mortar positions. The company reserve may be employed for a counterattack or to improve the security and defense of the mortar section.

f. The mortar section leader coordinates the section defense plan with the company reserve. Targets are planned around the section's position so other mortars or artillery can support.

E-5. DISPLACEMENT

Mortars displace to provide continuous support and to evade suppression whether the company is attacking or defending. This paragraph applies to both 60-mm and 81-mm mortars when manpacked by the platoon or section. When displacing the 81-mm platoon with vehicles, refer to Chapter 3 and FM 7-90.

a. The displacement plan and the position of the mortar platoon/section in the company formation should not disrupt the maneuver elements, should be responsive to the commander, and should provide the mortar section with local security. It should also allow the mortars to go into action quickly using the desired method of engagement, and provide ammunition resupply for the mortars. The displacement plan flows logically from other decisions made by the CO, the company FSO, and the mortar platoon/section leader.

b. If the CO determines that operations (offensive or defensive) will move slowly enough to stay within mortar range, and that continuous indirect fires must be available, he may order the mortars to displace to a suitable support position before the company moves out and not move them again until the company reaches its next position. The

choices available for displacement are displacement by platoon/ section and displacement by squad.

(1) *Displacement by platoon/ section.* This means that the whole platoon/section displaces at the same time. This allows the section to mass fires and the section sergeant to keep good control of his section. Moving as a platoon/section maximizes the limited FDC capability. It also is the fastest method of displacement. While the section is moving, its fire support is not immediately available unless it is positioned to fire using the direct lay or direct alignment method. But even using the hip shoot, it can be available with only minimum delay.

(2) *Displacement by squad.* This method allows continuous coverage of at least part of the company's sector. Because there is only one PRC-77 in the mortar section and six men for the 60-mm, it is difficult to provide continuous indirect fire coverage even when displacing by squad. It is possible, though, for the company to attach one squad to each of two bounding platoons so that while using the direct lay or direct alignment methods, one squad is always in overwatch of the company's movement. This may allow increased mortar coverage of the company sector during decentralized operations. It may also be the most effective means of infiltrating the mortars. It also reduces the difficulty of transporting the mortar ammunition. Each platoon carries the ammunition for the attached gun squad.

(3) *Attached or separate.* The CO also decides whether to move the mortars as a separate element in the company formation or to attach each gun squad to a subordinate element.

(a) The mortars are attached to a subordinate element when the situation requires that task organization (on a patrol or with the company support element, for example), or when the mortars need additional control, security, and load carrying capacity (during an infiltration, for example).

(b) The mortars move as a separate element in the company formation when the CO wishes to control them directly and keep them together for massed use. When the mortars move as an element, they can displace by platoon/section or by squad.

E-6. ENGAGEMENTS

There are various engagement methods: direct lay and direct alignment (which do not require a fire direction center), the conventional indirect fire, and the hip shoot. Direct lay and direct alignment are the primary methods of engagement for the 60-mm mortar.

a. **Direct Lay.** This method is used when the gunner can see the target. The mortar may be hand-held or bipod-mounted. An initial fire command is required to designate the target and (if desired) specify the shell-fuse combination and number of rounds. The gunner then adjusts fire and fires for effect without additional instructions. Its advantages are: the target can be engaged immediately when using the hand-held mode (the mortar only weighs 18 pounds and is therefore highly portable); it can be used by relatively untrained gunners, such as cross-trained infantrymen; and it does not require an FDC. Its disadvantages are: it requires the mortar crew to be relatively close to the enemy and therefore susceptible to direct and indirect fires; and it is less effective at night (targets that cannot be seen by the gunner cannot be engaged).

b. **Direct Alignment.** This method is used to allow the mortar crew to fire from full defilade positions without an FDC. It requires that an FO be within 100 meters of the

gun-target line and, if possible, within 100 meters of the guns. It can be used only when mounted on the bipod or held in the hand, although the bipod-mounted is much more accurate. Its advantages are: the target is engaged more quickly than with either of the FDC methods; the crew has more protection than in the direct lay method; and it does not require an FDC. Its disadvantages are: it is slightly slower than the direct-lay method; it requires the mortar crew to be relatively close to the enemy and therefore vulnerable to indirect fires or assault; it requires a trained FO to be within 100 meters of the guns or at least within 100 meters of the gun-target line; and the FO must also be in direct communication with the gun crew by voice, arm-and-hand signal, land-line, or radio. The gun must also be relaid to engage each different target.

c. **Conventional Indirect Fire.** This method is used when the mortars have been laid for direction and an FDC established with positions plotted on the M19 plotting board or the mortar ballistic computer. In this situation (for the 60-mm mortar), the section leader operates the MBC or the M19 plotting board, and the radio as the FDC. Its advantages are: the mortars can fire accurately at any target within range as long as it is observed by an FO who can communicate with the FDC; plotted targets can be accurately engaged during limited visibility; and the mortar crew can be located well away from enemy direct fires. Its disadvantages are: there is no designated FDC in the light infantry mortar section; and the fires are not as responsive as direct lay.

d. **Hip Shoot.** When a call for fire is received during movement and the target cannot be engaged by either the direct-lay or direct-alignment method, a hip shoot is initiated. A hip shoot is a hasty occupation of a firing position; it requires both an FDC and an FO. The section leader normally acts as the FDC (60-mm only). The FO's corrections may be sent over the radio or by a wire net. The platoon leader/section leader must quickly determine an azimuth of fire by map inspection. He then gives this direction to the mortar squads. The second squad leader uses the M2 compass (for the 60-mm section) to lay the base mortar. The section leader uses either the MBC, the graphical firing scale, or the firing tables to determine the appropriate elevation and charge. He uses either the MBC or the M19 plotting board to refine the firing data based on the FO's corrections. The section leader may use the aiming-point deflection method, depending upon the terrain. The second mortar is laid either by sight-to-sight or M2 compass. Its advantages are: a hip shoot allows fire support when other methods of engagement are not usable; and the mortar section is able to move at the same time as the unit and still provide adequate fires. Its disadvantages are: it is the slowest method of fire and least accurate.